ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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A Closer Look at Gasoline in New Hampshire

The gasoline supply in New Hampshire is getting cleaner and better for the environment in response to both federal and state legislation enacted in 2005. The petroleum industry responded to bills passed by Congress and the New Hampshire General Court by replacing Methyl tertiary-Butyl Ether (MtBE), added to gasoline to increase octane and reduce emissions, with cleaner, renewable ethanol made from corn and other renewable biomass. The transition to this less-polluting gasoline is largely transparent to the average consumer. However, there could be engine or fuel system problems for a very small number of pre-1980 vehicles or for others, if station owners failed to take correct steps to prepare their tanks for ethanol blended gasoline. The following information should address consumers' concerns related to conversion from MtBE to ethanol in gasoline.

Why are there different types of gasoline in New Hampshire?

New Hampshire has two basic types of gasoline: reformulated gas (RFG) and conventional gas. RFG conforms to pollution reduction requirements established by the Environmental Protection Act. "Conventional gasoline" refers to gasoline that does not meet those pollution reduction requirements. Both types may include some level of MtBE or ethanol. MtBE and ethanol are both "oxygenates," and are used to supply additional oxygen to increase octane levels, enhance combustion and reduce emissions.

Studies identify significant air quality and public health benefits that directly result from the use of RFG. Due to its cleaner burning characteristics, RFG use results in reductions of toxic air pollutants and ozone forming chemicals emitted from motor vehicles. Motor vehicles represent up to 50 percent of total emissions of toxic air pollutants caused by human activities. RFG significantly reduces the levels of many of these pollutants, thereby lessening associated air quality problems and projected risk to public health.

In New Hampshire, use of RFG is required by the EPA in the four southeastern counties of Merrimack, Hillsborough, Rockingham and Strafford counties because it burns cleaner and reduces air pollution from cars.

Why did gasoline change in New Hampshire?

Gasoline in New Hampshire changed in 2006 in response to three significant legislative actions:

- **EPACT removal of RFG oxygen mandate** – The Energy Policy Act of 2005 (EPACT) removed the federal Clean Air Act mandate requiring 2 percent oxygen in RFG, as of

May 5, 2006. The oxygen was previously supplied by adding oxygenates, either approximately 11 percent by volume of MtBE or 6 percent by volume of ethanol. Removal of this provision allows refiners greater flexibility to reduce the oxygen content.

- **National Renewable Fuels Standard** – EPACT also mandated an increase in the amount of renewable fuels used in gasoline nationally. Although several types of renewable fuels can potentially meet this requirement, the bulk of the national requirement was met by adding ethanol. In 2006 the national requirement was 2.78 percent renewable fuel content, or 4.0 billion gallons, rising to 7.5 billion gallons by 2012.

- **New Hampshire MtBE ban** – House Bill 58, passed by the New Hampshire General Court in spring 2005, banned the importation of gasoline with greater than 0.5 percent MtBE into New Hampshire, effectively banning MtBE as a gasoline additive in the state. Maine, Vermont and Rhode Island enacted similar bans.

In addition, a federal tax incentive for refiners and distributors created an industry incentive for refiners and distributors to use certain gasoline blends and higher volumes of ethanol.

These various requirements resulted in greater flexibility for the petroleum industry and an increase in the amount of ethanol in gasoline distributed in the Northeast. Suppliers were required to provide RFG in the four-county area, but after May 5, 2006, they had the option of reducing MtBE until January 1, 2007, the effective date of the legislative ban. Most suppliers used ethanol to provide the necessary octane during 2006 and increased its use in order to take advantage of the federal tax incentive. Many refiners supplied up to 10 percent by volume of ethanol in gasoline (also referred to as E10). However, different areas of the state received different blends, some with no ethanol at all, depending on price and supply.

How can I tell if the gasoline I purchase contains ethanol?

Consumers should notice little, if any, difference in ethanol blended gasoline as far as vehicle performance. Some sources have reported a minor decrease in fuel economy of between 1 and 3 percent. For example, a vehicle getting 25 mpg might go down to 24.25 mpg, but it is doubtful that most motorists would notice this difference.

Since ethanol is highly soluble in water, ethanol blended gasoline is not compatible with water in storage tanks, even at relatively small amounts. Ethanol must be transported and blended into gasoline at the terminals in order to avoid contact with water, sludge, and scale that may be present in distribution tanks and pipelines.

While there is no specific requirement, DES and other state agencies are recommending that pumps be labeled appropriately to disclose the presence of ethanol blended gasoline. If in doubt, ask the station manager or operator.

What problems may be encountered with ethanol blended gasoline?

By far the vast majority of engines should not encounter any performance related problems. However, certain engine/fuel system components in pre 1980 engines may not be compatible with ethanol. For instance, certain types of rubber used in seals and hoses may deteriorate more rapidly when exposed to ethanol blended gasoline. If you have any questions about your vehicle's system compatibility with ethanol blended gasoline, please contact your engine manufacturer.

As mentioned above, ethanol blended gasoline is not compatible with water, and also acts as a solvent to break up and dissolve sludge and scale that may have accumulated in storage tanks over time. In order to avoid problems, before converting to ethanol blends station owners must remove all previously accumulated water, sludge and scale in tanks intended for storage of ethanol blends. If tanks are not appropriately prepared for this conversion, two problems can occur:

- Water in the tank can cause ethanol to separate into the water phase, resulting in either water being introduced into the engine fuel system or the octane content of the gas being reduced below engine driving requirements. Both of these conditions may cause poor performance or engine stalling.

- Ethanol may re-dissolve scale or sludge in the tank and potentially carry it into the vehicle fuel system, clogging fuel lines and filters.

The likelihood of either of these problems is remote. However, if consumers notice problems shortly after filling up with ethanol blended fuels, they should notify the station where the fuel was purchased to see if similar problems have been reported, and take the vehicle to a qualified technician immediately. The problem could be as simple as a plugged fuel line or filter, or may require draining bad gasoline out of the fuel system.

What about vehicles other than cars?

Boats, motorcycles, snowmobiles, ATVs, lawn and garden equipment, and other gasoline engines may encounter similar problems. If the vehicle engine or fuel system is pre-1980, contact the manufacturer for recommendations. If engine or fuel system performance problems related to ethanol blended gasoline are encountered, notify the station immediately and seek assistance from a qualified engine technician.

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